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Docket No. **4208-4148**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:	**10/662,470**	Confirmation No.:	9617
Applicant:	Jan-Erik EKBERG	Group Art Unit:	2617
		Examiner:	Huy C. Ho.
Filed:	September 16, 2003		
		Customer No :	27123
For:	MECHANISM FOR IMPROVING CONNECTION CONTROL IN PEER-TO-PEER AD-HOC NETWORKS		

AMENDMENT UNDER 37 C.F.R. § 1.111

Mail Stop **AMENDMENT**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Official Action (Paper No. 20070517) dated June 8, 2007,

Applicant respectfully requests reconsideration in view of the following amendments and remarks.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 15 of this paper.

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This listing of claims will replace all prior versions, and listings, of claims in the

application:

Listing of Claims:

1. (Previously Presented)   A system for locating at least one target device that supports a

required service in an ad-hoc communications network connecting at least one device and

supporting at least one service, wherein each said at least one target device is one of said at least one

device and the required service is one of said at least one service, comprising:

a memory device; and

processor disposed in communication with the memory device, the processor configured to:

conduct an inquiry of the ad-hoc communications network to discover at least one nearby

peer device in said at least one device, the inquiry including an indication that said at least one

nearby device may include a middleware layer, said middleware layer being middleware software

for providing application and service discovery;

when the inquiry includes the indication that said at least one nearby peer device may

include the middleware layer:

create a connection to said at least one nearby peer device;

confirm whether the peer device includes the middleware layer;

when the peer device includes the middleware layer:

send a service discovery request to the peer device; and

receive a response to the service discovery request, the response including distributed

information,

wherein the distributed information includes at least one reference to the required service, an

association between each reference and one of said at least one target device, and state information about said at least one target device.

2. (Original)   The system of claim 1, wherein a density of said at least one nearby device over a coverage area for the ad-hoc communications network is high.

3. (Original)   The system of claim 1, wherein the distributed information includes at least one information record, each information record including at least one of device information or application information.

4. (Original)   The system of claim 3, wherein the device information includes state information, an address, a friendly name, a hop count, a sequence number, a time value, and a time counter.

5. (Original)   The system of claim 3, wherein the application information includes an application identifier, capability information, version information, state information, an address, a hop count, a sequence number, a time value, and a time counter.

6. (Original)   The system of claim 3, wherein when the peer device includes the middleware layer, the processor is further configured to:

   store the disclosed information in a portion of the memory device,

   wherein the portion includes at least one record.

7. (Original)   The system of claim 6, wherein when the portion of the memory device is full, to

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store the disclosed information, the processor is further configured to:

> identify an oldest record of said at least one record; and

> overwrite the oldest record with a new information record from said at least one information record.

8. (Original)   The system of claim 6, wherein when the portion of the memory device is full, to store the disclosed information, the processor is further configured to:

> identify an old record of said at least one record;

> identify a new information record from said at least one information record, the new information record being a replacement for the old record; and

> overwrite the old record with the new information record.

9. (Original)   The system of claim 1, wherein a portion of the memory device includes exchanged information that identifies at least one application or service that said at least one nearby device supports.

10. (Original) The system of claim 9, wherein when receiving an inquiry request from one of said at least one nearby device, the processor s further configured to:

> distribute the exchanged information as part of a service discovery response.

11. (Original) The system of claim 1, wherein when the peer device includes the middleware layer, the processor is further configured to:

> establish a link connection to one of said at least one target device; and

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access the requested service.

12. (Previously Presented)   A method for locating at least one target device that supports a

required service in an ad-hoc communications network connecting at least one device and

supporting at least one service, wherein each said at least one target device is one of said at least one

device and the required service is one of said at least one service, comprising:

conducting an inquiry of the ad-hoc communications network to discover at least one nearby

peer device in said at least one device, the inquiry including an indication that said at least one

nearby device may include a middleware layer, said middleware layer being middleware software

for providing application and service discovery;

when the inquiry includes the indication that said at least one nearby peer device may

include the middleware layer:

creating a connection to said at least one nearby peer device;

confirming whether the peer device includes the middleware layer;

when the peer device includes the middleware layer:

sending a service discovery request to the peer device; and

receiving a response to the service discovery request, the response including distributed

information,

wherein the distributed information includes at least one reference to the required service,

and an association between each reference and one of said at least one target device, and state

information about said at least one target device.

13. (Original) The method of claim 12, wherein a density of said at least one nearby device over a

coverage area for the ad-hoc communications network is high.

14. (Original) The method of claim 12, wherein the distributed information includes at least one information record, each information record including at least one of device information or application information.

15. (Original) The method of claim 14, wherein the device information includes state information, an address, a friendly name, a hop count, a sequence number, a time value, and a time counter.

16. (Original) The method of claim 14, wherein the application information includes an application identifier, capability information, version information, state information, an address, a hop count, a sequence number, a time value, and a time counter.

17. (Original) The method of claim 14, wherein when the peer device includes the middleware layer, the method further comprises:

    storing the disclosed information in a portion of the memory device,

    wherein the portion includes at least one record.

18. (Original) The method of claim 17, wherein when the portion of the memory device is full, the storing of the disclosed information further comprises:

    identifying an oldest record of said at least one record; and

    overwriting the oldest record with a new information record from said at least one

        information record.

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19. (Original) The method of claim 17, wherein when the portion of the memory device is full, the storing of the disclosed information further comprises:

    identifying an old record of said at least one record;

    identifying a new information record from said at least one information record, the new

        information record being a replacement for the old record; and

    overwriting the old record with the new information record.

20. (Original) The method of claim 12, wherein a portion of the memory device includes exchanged information that identifies at least one application or service that said at least one nearby device supports.

21. (Original) The method of claim 20, wherein when receiving an inquiry request from one of said at least one nearby device, the method further comprises:

      distributing the exchanged information as part of a service discovery response.

22. (Original) The method of claim 12, wherein when the peer device includes the middleware layer, the method further comprises:

      establishing a link connection to one of said at least one target device; and

      accessing the requested service.

23. (Previously Presented)   A computer program product for locating at least one target device that supports a required service in an ad-hoc communications network connecting at least one

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device and supporting at least one service, wherein each said at least one target device is one of said

at least one device and the required service is one of said at least one service, comprising:

a computer readable medium storing:

program code for conducting an inquiry of the ad-hoc communications network to discover

at least one nearby peer device in said at least one device, the inquiry including an indication that

said at least one nearby device may include a middleware layer, said middleware layer being

middleware software for providing application and service discovery;

program code for creating a connection to said at least one nearby peer device;

program code for confirming whether the peer device includes the middleware layer;

program code for sending a service discovery request to the peer device; and

program code for receiving a response to the service discovery request, the response

including distributed information,

wherein the distributed information includes at least one reference to the required service, an

association between each reference and one of said at least one target device, and state information

about said at least one target device.

24. (Original) The computer program product of claim 23, wherein the distributed information

includes at least one information record, each information record including at least one of device

information or application information.

25. (Original) The computer program product of claim 24, the computer readable medium further

storing:

program code for storing the disclosed information in a portion of the memory device,

wherein the portion includes at least one record.

26. (Original) The computer program product of claim 25, wherein the program code for storing the disclosed information further comprises:

    program code for identifying an oldest record of said at least one record; and

    program code for overwriting the oldest record with a new information record from said at

        least one information record.

27. (Original) The computer program product of claim 25, wherein the program code for storing the disclosed information further comprises:

    program code for identifying an old record of said at least one record;

    program code for identifying a new information record from said at least one information

        record, the new information record being a replacement for the old record; and

    program code for overwriting the old record with the new information record.

28. (Original) The computer program product of claim 23, wherein a portion of the memory device includes exchanged information that identifies at least one application or service that said at least one nearby device supports.

29. (Original) The computer program product of claim 28, wherein when receiving an inquiry request from one of said at least one nearby device, the computer readable medium further stores:

    program code for distributing the exchanged information as part of a service

        discovery response.

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30. (Original) The computer program product of claim 23, the computer readable medium further

storing:

> program code for establishing a link connection to one of said at least one target
>
> device; and
>
> program code for accessing the requested service.

31. (Previously Presented)   A system for locating a target device that supports a required service

in an ad-hoc communications network connecting at least one device and supporting at least one

service, wherein the target device is one of said at least one device and the required service is one of

said at least one service, comprising:

a memory device; and

a processor disposed in communication with the memory device, the processor configured

to:

maintain a distributed database to associate each said at least one service to at least one of

said at least one device;

conduct an inquiry of the ad-hoc communications network to discover at least one nearby

device in said at least one device, the inquiry including an indication that said at least one nearby

device may include a middleware layer, said middleware layer being middleware software for

providing application and service discovery; and

access the distributed database to determine whether said at least one nearby device includes

the required service.

32. (Original) The system of claim 31, wherein the processor is further configured to:

establish a link connection with said at least one nearby device if the distributed

database includes an association between said at least one nearby device and the

required service.

33. (Original) The system of claim 32, wherein the distributed database includes at least one

reference to the required service and an association between said at least one reference and one of

said at least one target device.

34. (Original) The system of claim 31, wherein the processor is further configured to:

decline a link connection with said at least one nearby device if the distributed

database indicates that said at least one nearby device does not include the required

service.

35. (Previously Presented)   A method for locating a target device that supports a required service

in an ad-hoc communications network connecting at least one device and supporting at least one

service, wherein the target device is one of said at least one device and the required service is one of

said at least one service, comprising:

maintaining a distributed database to associate each said at least one service to at least one of

said at least one device;

conducting an inquiry of the ad-hoc communications network to discover at least one nearby

device in said at least one device, the inquiry including an indication that said at least one nearby

device may include a middleware layer, said middleware layer being middleware software for

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providing application and service discovery; and

accessing the distributed database to determine whether said at least one nearby device

includes the required service.

36. (Original) The method of claim 35, further comprising:

establishing a link connection with said at least one nearby device if the distributed database

includes an association between said at least one nearby device and the required service.

37. (Original) The method of claim 36, wherein the distributed database includes at least one

reference to the required service and an association between said at least one reference and one of

said at least one target device.

38. (Original) The method of claim 35, further comprising:

declining a link connection with said at least one nearby device if the distributed database

indicates that said at least one nearby device does not include the required service.

39. (Previously Presented)   A computer program product for locating a target device that

supports a required service in an ad-hoc communications network connecting at least one device

and supporting at least one service, wherein the target device is one of said at least one device and

the required service is one of said at least one service, comprising:

a computer readable medium storing:

program code for maintaining a distributed database to associate each said at least one

service to at least one of said at least one device;

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program code for conducting an inquiry of the ad-hoc communications network to discover at least one nearby device in said at least one device, the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discovery; and

program code for accessing the distributed database to determine whether said at least one nearby device includes the required service.

40. (Original) The computer program product of claim 39, the computer readable medium further storing:

program code for establishing a link connection with said at least one nearby device if the distributed database includes an association between said at least one nearby device and the required service.

41. (Original) The computer program product of claim 39, the computer readable medium further storing:

program code for declining a link connection with said at least one nearby device if the distributed database indicates that said at least one nearby device does not include the required service.

42. (Previously Presented) A system for locating a target device that supports a required service in an ad-hoc communications network connecting at least one device and supporting at least one service, wherein the target device is one of said at least one device and the required service is one of said at least one service, comprising:

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means for maintaining a distributed database to associate each said at least one service to at

least one of said at least one device;

means for conducting an inquiry of the ad-hoc communications network to discover at least

one nearby device in said at least one device, the inquiry including an indication that said at least

one nearby device may include a middleware layer, said middleware layer being middleware

software for providing application and service discovery; and

means for accessing the distributed database to determine whether said at least one nearby

device includes the required service.

43. (Original) The system of claim 42, further comprising:

means for establishing a link connection with said at least one nearby device if the

distributed database includes an association between said at least one nearby device and the required

·service.

44. (Original) The system of claim 42, further comprising:

means for declining a link connection with said at least one nearby device if the

distributed database indicates that said at least one nearby device does not include the required

service.

REMARKS

Status of the Claims

Claims 1-44 are all the claims pending in this application. As indicated in the Office Action, Claims 1-44 stand rejected, as follows:

Claims 12, 23, 35, 36, 39 and 42 were rejected under 35 U.S.C. § 102(e) as being anticipated by Arora (2004/0064568); *and*

Claims 1-11, 13-22, 24-34, 37, 38, 40 and 41 were rejected under 35 U.S.C. § 103(A) as being unpatentable over Arora, *et al.* (2004/0066456S) and further in view of Atkinson, *et al.* (2002/0012329).

Reconsideration and allowance of the Claims are respectfully requested in view of the following remarks.

Rejection of Claims Under 35 U.S.C. § 102(e)

Claims 12, 23, 35, 36, 39 and 42 were rejected under 35 U.S.C. § 102(e) as being anticipated by Arora (2004/0064568). The cited claims include features not disclosed in Arora and overcome the rejection under 35 U.S.C. § 102(e), as follows:

A.   Claim 12:

(i)   A method for locating at least one target device that supports a required service in an ad-hoc communications network connecting at least one device and supporting at least one service, wherein each said at least one target device is one of said at least one device and the required service is one of said at least one service, comprising:

The Examiner contends that Aurora in the Abstract discloses the subject matter of the preamble. The Abstract discloses a peer to peer network including selected peers having a distributed index mechanism for indexing and searching for peer presence information; providing a

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peer notification service; a peer discovery service and enabling peers to communicate with one another. There is no disclosure in the Abstract or elsewhere in the cited reference of a method of locating a target device that supports a required service, e.g. printing, faxing, as described in applicants specification at Paragraph 0010 and 0013. Aurora fails to address the problem or suggest a solution to locating target devices in an ad hoc network providing required services, e.g. printing, faxing for another device in the network.

> (ii)   conducting an inquiry of the ad-hoc communications network to discover at least one nearby peer device in said at least one device, the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discovery;

[0001]   The Examiner contends that Aurora at Paragraphs 14-15; 66; 129-131; 133; 137 and Figure 2 disclose the subject matter of feature (ii). The cited Paragraphs disclose a peer device including a zone for a distributed index; a hashing mechanism, and a routing mechanism. The distributed index provides functions for peers to join and leave a network; index and retrieve content and process queries for content or peer presence in the network. In contrast, applicants disclose a peer device including a middleware layer with an API that negotiates the communication between two applications to help an application find a counterpart application with the correct role for providing a required service. A distributed index responds to a peer query or directs the query to another distributed index. The distributed index does not negotiate communication between two applications to find an application with the correct role. A distributed index does not equate to a middleware layer.

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[0002]   (iii)   when the inquiry includes the indication that said at least one nearby peer device may include the middleware layer:

creating a connection to said at least one nearby peer device.

The Examiner contends that Arora at Paragraphs 65-66, 128-129, 149 discloses the subject matter of feature (iii). The cited Paragraphs describe a distributed index mechanism, peer devices and peer-to-peer platforms for interoperability of peer devices. Applicants can find no disclosure in the cited Paragraphs for creating a connection between two peer devices when there is an indication that a nearby device includes a middleware layer, as described in Applicants' specification at Paragraphs 0010 and 0052. Aurora does not disclose a middleware layer. Nor is a distributed index the equivalent of a middleware layer. Finally, the distributed index does not establish a connection with a querying device, but directs the querying device to a source for the query. Arora fails to disclose the subject matter of feature (iii).

(iv)   confirming whether the peer device includes the middleware layer:

The Examiner contends that Arora at Paragraphs 16-17 disclose the subject matter of feature (iv). Paragraphs 16-17 disclose a peer device being notified when a peer joins a peer session, there is no disclosure in the cited Paragraphs of the peer device confirming another peer device contains a middleware layer. There is not even a disclosure in the cited Paragraphs that another peer device contains a distributed index. Arora fails to disclose the subject matter of feature (iv).

(v)   when the peer device includes the middleware layer sending a service discovery request to the peer device;

The Examiner contends that Arora at Paragraphs 15; 18; 65; 74; 79; 109; and 351 disclose the subject matter of feature (v). The cited Paragraphs describe a peer search or query

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via the distributed index to discover the presence of other participating peers. A peer registers a query in the distributed index to discover another peer. The queries may be routed to other peers. An instant messaging index may be used to route messages between peers. Applicants can find no disclosure in the cited Paragraphs nor has the Examiner identified any disclosure in the cited Paragraphs regarding a device in an ad hoc network containing a middleware layer to perform application and service discovery for other devices. Discovering the presence of other devices in the P2P network via a distributed index does not equate to executing a middleware layer for applications or service discovery, as described in Applicants' specification at Paragraph 0010. Arora fails to disclose the subject matter of feature (v).

(vi)   receiving a response to the service discovery request, the response including distributed information.

[0003]   The Examiner contends that Arora at Paragraphs 76; 96; 100; 106; 141 and 214 discloses the subject matter of feature (vi). The cited Paragraphs disclose information, e.g. services and applications provided to peers upon joining a peer session. In contrast, Applicants specification at Paragraph 0010 discloses distributed information as associations between the services such as required service, and devices such as the target devices. Applicants can not find in the cited Paragraphs where the distributed information describes required services and associated target devices, as described in Applicants' specification at Paragraph 0010. Arora fails to disclose the subject matter of feature (vi).

(vii)   wherein the distributed information includes at least one reference to the required service, an association between each reference and one of said at least one target device, and state information about said at least one target device.

The Examiner contends that Arora at Paragraphs 74, 123, 132 and 605-606 discloses the subject matter of feature (vii). The cited Paragraphs disclose a peer information protocol which may include specific information about the current state of a peer: message count; network traffic performed by the peer; a peer identifier of the peer being queried and other data related to the peer operation. Applicants can find no disclosure relating to the association between a required service and a target device and the status of the target device. Arora fails to disclose the subject matter of feature (vii).

Summarizing, Arora discloses peer to peer network including a distributed index enabling peer devices to discover each other; communicate with each other and cooperate to form peer groups and share network resources. In contrast, claim 12 discloses a peer to peer network including peer devices having a middleware software layer with an API that negotiates communication between two applications to help an application find a counterpart application with the correct role. A distributed index in a peer device is a directory and does not equate to a middleware software layer in a peer device negotiating communication between two applications to find a counterpart application, as described in Applicants' specification at Paragraphs 35 and 36. Nor does the distributed index use communication protocols for linking peer devices to each other, as described in Applicants' specification at Paragraph 22.

The rejection of claim 12 under 35 U.S.C. § 102(e) is without support in the cited art. Withdrawal of the rejection and allowance of claim 12 are requested.

B.   Claim 23:

Claim 23 describes claim 12 in program product form. Claim 23 describes features corresponding to the features in claim 12 and not disclosed in Arora. The rejection of

claim 23, based on Arora, is without support in the cited art. Withdrawal of the rejection and allowance of claim 23 are requested.

C.   **Claim 35:**

(i)   A method for locating a target device that supports a required service in an ad-hoc communications network connecting at least one device and supporting at least one service, wherein the target device is one of said at least one device and the required service is one of said at least one service, comprising:

There is no disclosure in Arora, the cited reference, of a method of locating a target device that supports a required service, e.g. printing, faxing , as described in applicants specification at Paragraph 0010 and 0013. Aurora fails to address the problem or suggest a solution to locating target devices in an ad hoc network providing required services, e.g. printing, faxing for another device in the network

(ii)   maintaining a distributed database to associate each said at least one service to at least one of said at least one device;

The Examiner contends Arora at Paragraphs 168; 484; 513 and 555 discloses the subject matter of feature (ii). The cited Paragraphs describe module class identifiers; peer-to-peer platform discovery services; rendezvous peers, and peer advertising. Applicants can find no disclosure in the cited Paragraphs of a distributed database associating each service to at least one device as described in Applicants' specification at paragraph 0010.

(iii)   conducting an inquiry of the ad-hoc communications network to discover at least one nearby device in said at least one device, the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discovery; and

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Applicants distinguished feature (iii) from the cited art in the consideration of claim 12, feature (ii).

> iv) accessing the distributed database to determine whether said at least one nearby device includes the required service.

The Examiner contends that Arora at Paragraphs 74; 123; 132; 168; 555; 574; and 605-606 describes the claimed subject matter of feature (iv). Applicants have demonstrated in the consideration of the above feature (ii) there is no disclosure in Arora of a distributed database in terms of required services and target devices.

Summarizing, Arora fails to disclose the subject matter of the above features (i) - (iv) for the above indicated reasons. The rejection of claim 35 under 35 U.S.C. § 102(e) is without support in the cited art. Withdrawal of the rejection and allowance of claim 35 are requested.

D. Claim 39

> (i) A computer program product for locating a target device that supports a required service in an ad-hoc communications network connecting at least one device and supporting at least one service, wherein the target device is one of said at least one device and the required service is one of said at least one service, comprising:

This feature was distinguished from Arora, the cited prior art, in the consideration of claim 35, feature (i).

> a computer readable medium storing:

> (ii) program code for maintaining a distributed database to associate each said at least one service to at least one of said at least one device:

The Examiner contends Arora at Paragraphs 168; 484; 513 and 555 discloses the

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subject matter of feature (ii). The cited art discloses a module class identifier; discovery services and rendezvous peers, and peer advertising. Applicants can find no disclosure in the cited Paragraphs wherein a distributed database contains a listing of peer devices and services and associates each service to at least one device, as described in Applicants' specification at Paragraphs 0013; 0045 and 0046.

(iv)   program code for conducting an inquiry of the ad-hoc communications network to discover at least one nearby device in said at least one device, the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discovery; and

This feature was distinguished from Arora, the cited prior art, in the consideration of claim 35, feature (iii).

(v)   program code for accessing the distributed database to determine whether said at least one nearby device includes the required service.

This feature was distinguished from Arora, the cited prior art, in the consideration of claim 35, feature (iv).

Summarizing, Arora fails to disclose the subject matter of the above features (i) – (v) for the above indicated reasons. The rejection of claim 39 under 35 U.S.C. § 102 (e) is without support in the cited art. Withdrawal of the rejection and allowance of claim 39 are requested.

E.   **Claim 42:**

(i)   A system for locating a target device that supports a required service in an ad-hoc communications network connecting at least one device and supporting at least one service, wherein the target device is one of said at least one device and the required service is one of said at least one service, comprising:

This feature was distinguished from Arora, the cited prior art, in the

consideration of claim 35, feature (i)

    (ii)   means for maintaining a distributed database to associate each said at

least one service to at least one of said at least one device:

This feature was distinguished from Arora, the cited prior art, in the

consideration of claim 39, feature (ii)

    (iii)   means for conducting an inquiry of the ad-hoc communications

network to discover at least one nearby device in said at least one device, the inquiry including an

indication that said at least one nearby device may include a middleware layer, said middleware

layer being middleware software for providing application and service discovery; and

This feature was distinguished from Arora in the consideration of claim 35,

feature (iii).

    (iv)   means for accessing the distributed database to determine whether

said at least one nearby device includes the required service.

This feature was distinguished from Arora, the cited prior art, in the

consideration of claim 39, feature (v).

Summarizing, Arora fails to disclose the subject matter of the above features

(i) – (iv) for the above indicated reasons. The rejection of claim 42 under 35 U.S.C. § 102 (e) is

without support in the cited art. Withdrawal of the rejection and allowance of claim 42 are

requested.

F.   **Claim 36:**

    (i)   The method of claim 35, further comprising:

establishing a link connection with said at least one nearby device if the

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distributed database includes an association between said at least one nearby device and the required

service.

The Examiner contends that Arora at Paragraphs 74; 123; 132; 128-129;

149 and 605-606 as modified by Atkinson discloses the subject matter of claim 36. The feature

was distinguished from Arora, the cited prior art, in the consideration of claim 35, feature (iii).

Atkinson does not supply the missing disclosure in Arora related to an association between a

nearby device and required service.

The combination of Arora and Atkinson fails to disclose the subject matter

of claim 36. The rejection of claim 36 under 35 U.S.C. § 103(a) is without support in the cited

prior art. Withdrawal of the rejection and allowance of claim 36 are requested.

Rejection of Claims Under 35 U.S.C. 103

Claims 1-11, 13-22, 24-34, 37, 38, 40 and 41 were rejected under

35 U.S.C.§ 103(a) as being unpatentable over Arora et al. (2004/00664568), hereinafter Arora

and further in view of Atkinson et al. (2002/0012329), hereinafter Atkinson. The cited claims

include features not disclosed or suggested in Arora in view of Atkinson and overcome the

rejection under 35 U.S.C. § 103 (a), as follows

A.   Claim 1:

(i)   A system for locating at least one target device that supports a required

service in an ad-hoc communications network connecting at least one device and supporting at least

one service, wherein each said at least one target device is one of said at least one device and the

required service is one of said at least one service, comprising:

This feature was distinguished from Arora, the cited art, in the consideration of

claim 35, feature (i). Atkinson relates to the fly execution of software instructions and does not

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supply the missing disclosure in Arora related to locating a target device that supports a required service.

      (ii)   processor disposed in communication with the memory device, the processor configured to:

      conduct an inquiry of the ad-hoc communications network to discover at least one nearby peer device in said at least one device, the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discovery;

      The feature was distinguished from Arora, the cited art, in the consideration of claim 35, feature (ii). Atkinson does not supply the missing feature related to a middleware layer for providing application and service discovery.

      (iii)   when the inquiry includes the indication that said at least one nearby peer device may include the middleware layer:

      This feature was distinguished from Arora, the cited art in the consideration of claim 12, feature (iii). Atkinson does not supply the missing feature in Arora related to an indication that at least one nearby device may include a middleware layer.

      (iv)   create a connection to said at least one nearby peer device:

      This feature was distinguished from Arora, the cited art in the consideration of claim 12, feature (iii). Atkinson does not supply the missing feature in Arora related to creating a connection when a middleware layer is indicated.

      (v)   confirm whether the peer device includes the middleware layer;

      This feature was distinguished from Arora, the cited art in the consideration of claim 12, feature (iv). Atkinson does not supply the missing feature in Arora related to creating a

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connection when a middleware layer is indicated.

    (vi)   when the peer device includes the middleware layer:

    send a service discovery request to the peer device: and

This feature was distinguished from Arora, the cited art, in the consideration of claim 12, feature (v). Atkinson does not supply the missing feature in Arora related to sending a discovery request when a middleware layer is indicated.

    (vii)   receive a response to the service discovery request, the response including distributed information.

This feature was distinguished from Arora, the cited art, in the consideration of claim 12, feature (vi). Atkinson does not supply the missing feature in Arora, the cited prior art, related to sending a discovery request when a middleware layer is indicated.

    (viii)   wherein the distributed information includes at least one reference to the required service, an association between each reference and one of said at least one target device, and state information about said at least one target device.

This feature was distinguished from Arora, the cited art, in the consideration of claim 12, feature (vii). Atkinson does not supply the missing feature in Arora, the cited prior art, related to distributed information including a reference to required service; an association between a target device and a required service, and state information.

Summarizing, Arora in view of Atkinson fails to disclose the subject matter of the above features (i) – (viii) for the above indicated reasons. The rejection of claim 1 under 35 U.S.C. § 103 (a) is without support in the cited art. Withdrawal of the rejection and allowance of claim 1 are requested.

    B.   **Claim 31**:

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    (i)   A system for locating a target device that supports a required service in an ad-hoc communications network connecting at least one device and supporting at least one service, wherein the target device is one of said at least one device and the required service is one of said at least one service, comprising:

This feature was distinguished from Arora, the cited art, in the consideration of claim 12, feature (ii). Atkinson does not supply the missing feature in Arora, the cited prior art, related to locating a target device that supports a required service.

a memory device, and

    (ii)   a processor disposed in communication with the memory device, the processor configured to:

maintain a distributed database to associate each said at least one service to at least one of said at least one device;

This feature was distinguished from Arora, the cited art, in the consideration of claim 42, feature (ii). Atkinson does not supply the missing feature in Arora, the cited prior art, related to a distributed database to associate at least one service to at least one device.

    (iii)   conduct an inquiry of the ad-hoc communications network to discover at least one nearby device in said at least one device, the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discovery; and

This feature was distinguished from Arora, the cited art, in the consideration of claim 42, feature (iii). Atkinson does not supply the missing feature in Arora, the cited prior art, related to an inquiry including an indication that at least one nearby device may include a middleware layer.

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(iv)   access the distributed database to determine whether said at least one nearby device includes the required service.

This feature was distinguished from Arora, the cited art, in the consideration of claim 35, feature (iii). Atkinson does not supply the missing feature in Arora, the cited prior art, related to an inquiry including an indication that at least one nearby device may include a middleware layer.

Summarizing, Arora in view of Atkinson fails to disclose the subject matter of the above features (i)   (viii) for the above indicated reasons. The rejection of claim 31 under 35 U.S.C. § 103 (a) is without support in the cited art. Withdrawal of the rejection and allowance of claim 31 are requested

C.   Dependent Claims 2-11; 13-22; 24-34; 36-38 and 40-41:

The subject dependent claims are not disclosed or suggested by Arora or Arora in view of Atkinson for the same reasons indicated in connection with the consideration of independent claims 1, 12, 23, 31, 35, 39 and 42. To expedite the prosecution of the application, Applicants delay responding to the rejection of dependent claims 2-11; 13-22; 24-34; 36-38 and 40-41 until the Examiner has ruled on the patentability status of independent claims 1, 12, 23, 31, 35, 39 and 42.

CONCLUSION

Applicants have demonstrated that the P2P network of Arora does not equate to an ad hoc network of devices including a middleware layer of software for application and service discovery, regardless of the device application program interface. Nor does a distributed index in a P2P device directing queries to other peer devices in a network equate to a middleware layer which receives distributed information describing associations between services and

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devices. Nor does an index mechanism distributed in peer devices through out a P2P network for directing queries to other index mechanism equate to a middleware layer in devices which responds to requests of all devices in a network. Atkinson relates to changing protocol stack on the fly and does not supply the missing middleware features in Arora. The rejection of claims 1-53 under 35 U.S.C. § 102(e) or 103(a) is not supported in the cited art. Entry of the amendment, withdrawal of the rejection, allowance of the claims and passage to issue of the application are requested.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 4208-4148.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No 13-4500, Order No. 4208-4148.

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

Dated: September ***, 2007   By: _____
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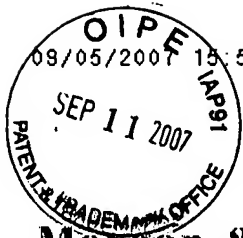
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COMMENTS:

Dear Examiner Ho:

Attached please find a draft response for your review. Please let us know if you have any questions.

Best Regards,

Joe Redmond

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